

NICE GUIDELINES

Assessment and initial management of feverish illness in children younger than 5 years: summary of NICE guidance

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BMJ 2007;334:1163-4
doi:10.1136/bmj.39218.495255.AE

Why read this summary?

Infectious diseases remain a major cause of childhood mortality and morbidity in the United Kingdom (personal communication, R MacFaul, Department of Health) with some evidence that this is associated with deficiencies in health care.¹ Fever in young children usually indicates an underlying infection, but identifying the cause can pose a diagnostic challenge. In the absence of national guidance, feverish illness is variably managed across the UK. There is thus a perceived need to improve its assessment and management. This article summarises the most recent guidance from the National Institute for Health and Clinical Excellence (NICE) on how to assess and initially manage feverish illness in children aged under 5 years.²

Recommendations

NICE recommendations are based on systematic reviews of best available evidence. When minimal evidence is available, a range of consensus techniques is used to develop recommendations. In this summary, recommendations derived primarily from consensus techniques are indicated with an asterisk (*).

The recommendations are largely based around an evidence based traffic light system that is used to assess

the risk of serious illness as low (green), intermediate (amber), or high (red), and to direct management accordingly (figs 1-3).

This guideline applies until the underlying condition is diagnosed, at which point the child should be treated according to guidance for that condition.

Assessment and management according to the risk of serious illness

Clinical assessment should consist of three stages:

- Identify life threatening features (airway, breathing, circulation, disability). If any are present, refer immediately for emergency medical care
- Assess the risk of serious illness using the traffic light system (fig 1; based on prospective cohort studies and validated scoring systems)
- Attempt to identify a focus of infection or features of specific serious conditions (box).

Measure and record temperature, heart rate, respiratory rate, and capillary refill time in all children with feverish illness.*

Management in primary and specialist care is determined by the assessment of risk of serious illness (figs 2 and 3). Children who progress to the later stages

Assessing the risk of serious illness in feverish children under 5 years

	Low risk	Intermediate risk	High risk
Colour	• Normal colour of skin, lips, and tongue	• Pallor reported by parent or carer	• Pale, mottled, ashen, or blue
Activity	• Responds normally to social cues • Is content or smiles • Stays awake or wakes quickly • Strong normal cry or not crying	• Doesn't respond normally to social cues • Wakes only with prolonged stimulation • Decreased activity • No smile	• No response to social overtures • Appears ill to a healthcare professional • Unroutable or does not stay awake if roused • Weak, high pitched, or continuous cry
Respiration	• Normal	• Nasal flaring • Tachypnoea: respiratory rate >50 breaths/min (age 6-12 months) or >40 breaths/min (age >12 months) • Oxygen saturation ≤95% in air • Crackles on auscultation	• Grunting • Tachypnoea: respiratory rate >60 breaths/min (at any age) • Moderate to severe chest indrawing
Hydration	• Normal skin and eyes • Moist mucous membranes	• Dry mucous membranes • Poor feeding in infants • Capillary refill time ≥3 seconds • Reduced urine output	• Reduced skin turgor
Other	• No amber or red features	• Fever for ≥5 days • Swelling of a limb or joint • Not weight bearing or not using an extremity • A new lump >2 cm	• Temperature ≥38°C (age 0-3 months); ≥39°C (age 3-6 months) • Non-blanching rash • Bulging fontanelle • Neck stiffness • Status epilepticus • Focal neurological signs • Focal seizures • Bile stained vomiting

This is one of a series of
BMJ summaries of new NICE
guidelines, which are based
on the best available evidence;
they will highlight important
recommendations for clinical
practice, especially where
uncertainty or controversy exists.

Managing feverish children under 5 years in primary care

Low risk	Intermediate risk	High risk
Manage at home with appropriate advice including verbal or written information, or both, on warning symptoms and how to access further healthcare	If no diagnosis has been reached: provide "safety net" or, if clinically indicated, refer to paediatric care. The safety net is verbal or written information on warning symptoms and how to access further health care, or liaison with other healthcare workers to ensure patient can access them directly for further assessment, or further follow-up at a prearranged time and place	From remote assessment (eg telephone triage): refer urgently for face to face assessment within 2 hours* (this should usually take place in primary care) From face to face assessment: refer urgently to paediatric care

* Recommendation derived primarily from consensus technique

Managing feverish children under 5 years in paediatric care*

Low risk	Intermediate risk	High risk
<ul style="list-style-type: none"> • Test urine for urinary tract infection • No routine bloods or chest x ray 	<ul style="list-style-type: none"> • Test urine for urinary tract infection and (unless deemed unnecessary by experienced paediatrician): <ul style="list-style-type: none"> - Full blood count, blood culture, C-reactive protein - Chest x ray if fever $>39^{\circ}\text{C}$ and white blood count $>20 \times 10^9/\text{l}$ - Consider lumbar puncture if child is <1 year old 	<ul style="list-style-type: none"> • Full blood count, blood culture, C-reactive protein • Test urine for urinary tract infection • Consider chest x ray, lumbar puncture, serum electrolytes, blood gas • Empirical parenteral antibiotics if: <ul style="list-style-type: none"> - Age <1 month - Age <3 months and appears unwell or white blood count <5 or $>15 \times 10^9/\text{l}$ - Shocked, unrousable, or signs of meningococcal disease

* For an infant <3 months old and temperature $\geq 38^{\circ}\text{C}$: observe in hospital and monitor vital signs. For a child ≥ 3 months old: use this chart.

of the guideline are likely to have fever without apparent source, a relatively common problem that is recognised as being particularly challenging to manage.³

Other key recommendations

- Parental perception of fever should be taken seriously
- Measuring body temperature:
 - 1 Do not routinely use the oral and rectal routes in children aged 0-5 years*
 - 2 In infants under the age of 4 weeks, use an electronic thermometer in the axilla
 - 3 In children aged 4 weeks to 5 years, use an electronic thermometer in the axilla, a chemical dot thermometer in the axilla, or an infrared tympanic thermometer
- Do not routinely use antipyretic agents with the sole aim of reducing fever in children who are otherwise well*
- Do not routinely administer paracetamol and ibuprofen either in combination or alternately; but consider using the alternative drug if the child does not respond to the first agent
- Antipyretic agents do not prevent febrile convulsions and should not be used specifically for this purpose
- Do not prescribe oral antibiotics to children with fever without apparent source.

Overcoming barriers

Unlike previous disease-focused guidelines, this problem-focused guidance is not accompanied by definite targets to be achieved. Instead, it requires health professionals to be aware of key clinical features for assessing the risk of serious illness in a child with fever and to

Clinical features of specific serious diseases in conjunction with fever

Meningococcal disease Non-blanching rash, particularly with one or more of: <ul style="list-style-type: none"> • An ill looking child • Lesions larger than 2 mm in diameter (purpura) • A capillary refill time of ≥ 3 seconds • Neck stiffness Meningitis Neck stiffness Bulging fontanelle Decreased level of consciousness Convulsive status epilepticus	Nasal flaring Chest indrawing Crackles on auscultation Oxygen saturation 95% Urinary tract infection Vomiting Poor feeding Lethargy Irritability Abdominal pain or tenderness Urinary frequency or dysuria Offensive urine or haematuria Septic arthritis or osteomyelitis Swelling of a limb or joint Not using an extremity Non-weight bearing Kawasaki disease Fever for more than five days and at least four of: <ul style="list-style-type: none"> • Bilateral conjunctival injection • Change in mucous membranes • Change in the extremities • Polymorphous rash • Cervical lymphadenopathy
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record these features so that the child's progress can be monitored.

Some recommendations may not be readily accepted as they are derived from formal consensus (through the Delphi technique) rather than published evidence. Such recommendations arose only where no relevant published evidence was available, and the Delphi panel reflected a wide range of opinion, from parents and carers as well as workers in primary and secondary health care. Other children's guidelines based on a combination of formal evidence and the Delphi process have reduced attendance times in emergency departments and the number of unnecessary investigations.⁴

To support implementation, the Guideline Development Group has developed a leaflet (available from August 2007 at www.nice.org.uk/CG047) that can be given to parents and carers of children with feverish illness.

We thank members of the Guideline Development Group, National Collaborating Centre for Women and Children's Health staff, and also Françoise Cluzeau, Diane Crawford, Bobbie Lloyd, Roddy MacFaul, Wendy Riches, and Matthew Thompson.

Competing interests: None declared.

Funding: The National Collaborating Centre for Women and Children's Health was commissioned and funded by National Institute for Health and Clinical Excellence to write this summary.

- 1 Ninis N, Phillips C, Bailey L, Pollock JI, Nadel S, Britto J, et al. The role of healthcare delivery in the outcome of meningococcal disease in children: case-control study of fatal and non-fatal cases. *BMJ* 2005;330:1475.
- 2 National Institute for Health and Clinical Excellence. *Feverish illness: assessment and initial management in children younger than 5 years*. London: NICE; 2007. www.nice.org.uk/CG047
- 3 Baraff LJ. Management of fever without source in infants and children. *Ann Emerg Med* 2000;36:602-14.
- 4 Armon K, MacFaul R, Hemingway P, Werneke U, Stephenson T. The impact of presenting problem based guidelines for children with medical problems in an accident and emergency department. *Arch Dis Child* 2004;89:159-64.